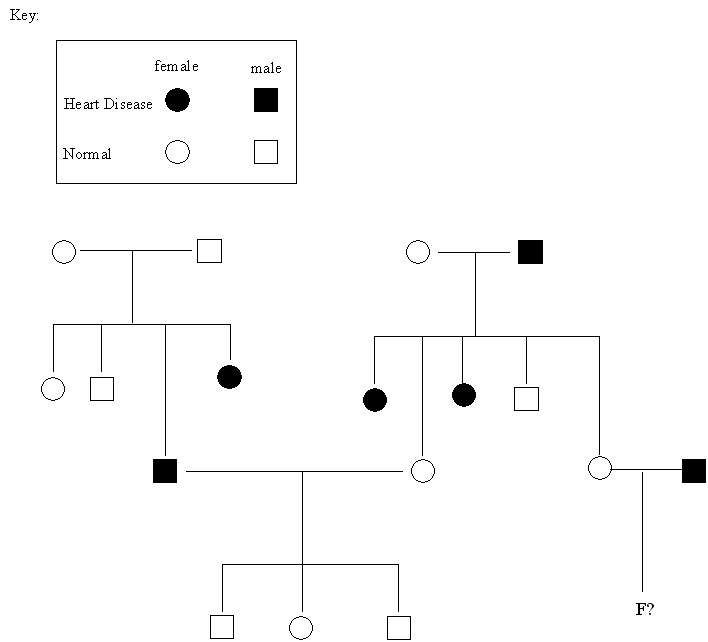
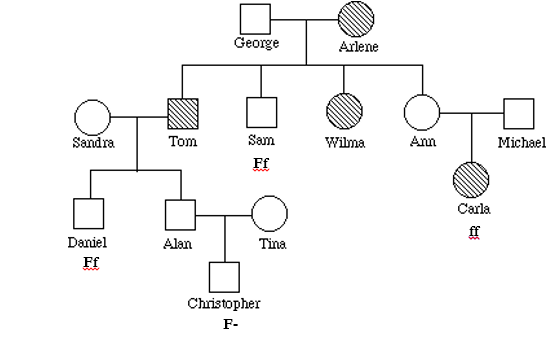
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_

**Notes Questions for the Unit 10, Part 2 Notes: Human Genetics**

Thank you to Ms. Glick

1. A woman with Type A blood and a man with Type AB blood have a baby. The woman is suing the man for child support, but he is refusing to pay because he says the baby (who has Type O blood) is not his. Is he right or should he be paying child support? Use a Punnett Square to prove your answer.
2. Is it possible for a man with Type A blood and a woman with Type B blood to have a child with Type O blood? Use a Punnett Square to support your answer.
3. Compare and contrast pleitropic inheritance and polygenic inheritance; provide an example of each.
4. To the right is a pedigree for an inherited heart disease.
   1. What type of inheritance pattern is displayed in this pedigree?
   2. What is the probability that their child F would have the inherited heart disease?
5. A **typical pedigree** for a family that carries Falconi anemia is shown below. Note that carriers are **not** indicated with half-colored shapes in this chart (the individuals with slanty lines in their circles or squares have the disorder). The genotypes of some individuals are given.



To answer questions below, use the letter "f" to indicate the recessive Falconi anemia allele, and the letter "F" for the normal allele.

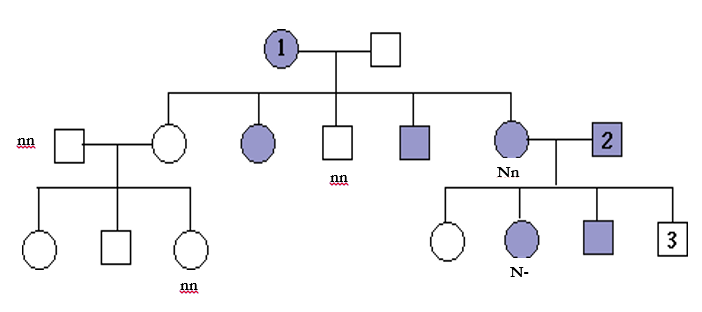
a. What is Arlene's genotype?

b. What is George's genotype?

c. What are Ann & Michael's genotypes?

d. What are Sandra’s possible genotypes .

1. A **typical pedigree** for a family that carries neurofibromatosis is shown below. Note that carriers are **not** indicated with half-colored shapes in this chart. Use the letter "N" to indicate the dominant neurofibromatosis allele, and the letter "n" for the normal allele. The genotypes of some individuals are given.



1. Is individual #1 most likely homozygous dominant or heterozygous? Explain how you can tell.
2. What is the genotype of individual #3?
3. Can you be sure of the genotypes of the affected siblings of individual #3? Explain.
4. **Draw Your Own Pedigree**

* **Trait:** blood type -- Blood type is determined by the presence of several different proteins found on the surface of red blood cells. Blood type “A” has the A protein; blood type “B” has the B protein; blood type AB has both; blood type O has neither. The +/- indicates another protein called Rh.
* **Forms of the trait:** inheritance via autosomal multiple allelism (A, B, or O) results in the blood types A, B, AB or O. The alleles for blood protein A and B are codominant, the "O" allele is recessive to both the A and B alleles.
* Use **AA, AO, AB, BB, BO or OO to represent the genotypes** of all individuals that you show in the pedigree you draw**.** For some individuals, you will include their names in the pedigree. Some individuals will be unnamed.You do not need to shade in any circles and squares.

As a high school project, **Maureen** decides to trace the inheritance of blood types through her extended family, all the way back to her great-grandmother Katherine. Here’s what Maureen found out….

Maureen’s great-grandmother Katherine, has A type blood. Katherine and her husband John had four children – two sons, Michael (who has blood type AB) and David (who has type O blood); a daughter (Jessica) with type O blood and another daughter (Jennifer) with type A blood. Jessica never married; her sister Jennifer did get married and had three sons (one with type A blood, one with type AB blood and one with type O blood). Both of Katherine's sons also get married – Michael marries a woman with type O blood and together they have two daughters (Anna – type A; Leanne – type B); David marries a woman with type A blood, and they have three children (daughter Fran and son Albert who both have type A blood, and a son Matthew with type O blood). Matthew marries Janine and together they have one daughter, **Maureen**. Maureen knows that her parents both have the same blood type, but she has never yet had a blood test to determine her own blood type.

* 1. Draw your pedigree in the space below.
  2. What does Maureen’s blood type have to be? How do you know?